Aim: An increasing proportion of knee arthroplasties are performed using robotic-assisted surgical techniques. While these techniques are associated with shorter lengths of stay, better patient outcomes and lower revision rates, the increase in intra-operative time and requirement for extra instrumentation, such as array pins, may lead to an increased risk of infection. Therefore, this review reports summary rates of surgical site infection (SSIs) in robotic-assisted knee arthroplasties.

Method: The protocol for this review was prospectively registered on PROSPERO. Embase, PubMed/MEDLINE, Cochrane and CINAHL databases were searched from 2004 to November 2020 to reflect modern robotic surgical practice. The primary outcome was overall number of SSIs that occurred within one year of the primary operative procedure, which was sub-classified into either deep or superficial and pin-site infections. Risk of bias was assessed via the Cochrane RoB2 tool. Conventional Q and I² tests for heterogeneity were performed with subsequent meta-analysis using a DerSimonian-Laird random-effects model.

Results: From 1052 studies identified, 17 were included, of which 13 were deemed to have an overall ‘low’ risk of bias. This review included 4400 unicompartmental and 1883 total knee arthroplasties. The summary rate of overall SSIs within one year of primary robotic knee arthroplasty was 0.568% (SE=0.183, 95% CI=0.209–0.927). This rate fell to 0.154% (SE=0.069, 95% CI=0.018–0.290) for deep infections and 0.347% (SE=0.109, 95% CI=0.133–0.561) for superficial and pin-site infections.

Conclusions: The rates of surgical site infection were found to be low in robotic knee arthroplasty, however, further research is required to compare outcomes with conventional knee arthroplasty.